Report title	Arboricultural Impact Assessment
Report reference	BE596.2
Revision	B
Site address	Surrey Close, Barnsley S70 4NB
Grid reference	SE 34574 05347
Report compiled by	David Watts BSc (Hons) FdSc MArborA MCIEEM
Client	Sub Zero Homes
Date	5th February 2018

Bagshaw Ecology

1. Introduction

1.1. Instruction

1.1.1. Bagshaw Ecology Ltd have been instructed by Aidan Woodrow, on behalf of Sub Zero Homes, to carry out an Arboricultural Impact Assessment of the land at Surrey Close, Barnsley S70 4NB, hereafter referred to as 'the site'.

1.1.2. The purpose of the report is to:

- Assess the quality of the trees on and immediately adjacent to the site, in accordance with BS5837: 2012 – Trees in Relation to Design, Demolition and Construction: Recommendations (hereafter referred to as BS5837: 2012).
- Identify trees suitable for retention and for removal due to the proposed development.
- Prescribe tree protection measures to ensure that retained trees thrive after the development has been completed.
- Prescribe arboricultural recommendations for the long-term management of trees on the site.
- To assess the site for its suitability for mitigation planting, and to specify planting requirements.

1.2. Site Details

1.2.1. The site is accessed off the northwest of Surrey Close in Barnsley. The surrounding area is predominantly residential, with moderate levels of tree cover.

1.2.2. The site comprises an area of scrub.
The topography of the site is variable, with an incline from the north to the south.

2. Methods

2.1. Desk Based Study

2.1.1. The local council was consulted to determine if there are any Tree Preservation Orders or Conservation Areas affecting trees on or immediately adjacent to the site.

2.1.2. Cranfield (2017) was consulted as to the soil type of the site and the surrounding area.

2.2. Site Survey

2.2.1. The site survey was carried out on 28th November 2017. The survey was carried out by David Watts, an experienced arboricultural consultant, who holds an FdSc in Arboriculture, a BSc (Hons) Ecology, has been awarded the Lantra Professional Tree Inspection Certificate and who is a member of the Arboricultural Association at Professional level.

2.2.2. All trees on site were inspected from ground level, using the Visual Tree Assessment (VTA) method (Mattheck *et al*, 2015). Any notable defects of trees were recorded; however, the site survey did not constitute a full tree safety assessment.

2.2.3. Trees were plotted onto an Ordnance Survey map with a Getac PS236. Tree heights and crown clearances were measured to the nearest 0.1 m with a clinometer. Crown spreads of trees were recorded to the nearest 0.1m with a laser measurer.

2.2.4. The diameter at breast height (DBH) of trees was measured to the nearest 10mm. This was used to calculate the root protection area (RPA) of trees using methods prescribed in BS5837: 2012:

- For single stem trees, the RPA was calculated as a circle with a radius 12 times the DBH.
- For trees with 2-5 stems, the RPA was calculated using the formula:

$$\text{RPA} = \sqrt{(\text{Stem 1 DBH})^2 + (\text{Stem 2 DBH})^2 + \ldots (\text{Stem 5 DBH})^2}$$

- For trees with 6 or more stems, the RPA was calculated using the formula:

$$\text{RPA} = \sqrt{(\mu DBH)^2 \text{ x number of stems}}$$

2.2.5. In accordance with BS5837: 2012, trees were classified as either A, B, C or U, using the criteria shown in Table 1.

2.3. Constraints

2.3.1. The survey was constrained by the season in which it took place. Some pathogens of trees, in particular fruiting bodies of decay fungi, are only visible at certain times of year.

2.3.2. The GPS device used to plot the trees is accurate up to a range of 2m; therefore, actual tree locations may vary to those shown in the Tree Constraints Plan.

Table 2.1 BS5837 Cascade Chart (adapted from British Standards, 2012)

Category	Definition	Retention	Colour code
Category A	Trees of high quality with an estimated remaining life expectancy of at least 40 years; trees that are particularly good examples of their species, especially if rare or unusual.	Highly desirable	Light green
Category B	Trees of moderate quality with an estimated remaining life expectancy of at least 20 years; trees lacking the special quality to merit category A designation.	Desirable	Dark blue
Category C	Trees of low quality with an estimated remaining contribution of at least 10 years, or trees with a stem diameter below 150mm; unremarkable trees of very limited merit or such impaired condition that they do not qualify in higher categories.	Feasible, but should be removed if posing a constraint to development	Grey
Category U	Trees that have serious, irremediable, structural and/or physiological defects, including those that will become unviable after removal of other category U trees.	Unfeasible	Dark red

3. Results

3.1. Desk Based Study

3.1.1. A search on the website of Barnsley Metropolitan Borough Council (2017) confirmed that there are no trees afforded protection by TPOs on the site, and that the site is not within a Conservation Area.

3.1.2. Cranfield (2017) states that the soil type of the surrounding area consists of freely draining, slightly acid, loamy soils. No further soil analysis was carried out as part of the survey.

Recommendations

Mitigation

The location of trees planted for mitigation should be detailed in the development plans, and should include trees adjacent to the west boundary to provide screening to adjacent properties.

Trees planted for mitigation should be heavy standard in size, and should be planted in accordance with BS8545: 2014 – Trees: from Nursery to Independence in the Landscape. Trees should be sourced from UK-grown stock.

Tree species planted for mitigation should be agreed with by the local authority tree officer. Suggested species include:

- Silver birch *Betula pendula*
- Hornbeam *Carpinus betulus*
- Sweet gum *Liquidamber styraciflua*
- Dawn redwood *Metasequoia glyptostroboides*

6. References

Barnsley Metropolitan City Council (2017). *Interactive Maps* [online]. Available at: >www.barnsley.gov.uk< [accessed 8th December 2017]

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Mattheck, C., Bethge, K. and Weber, K. (2015). *The Body Language of Trees.* The Karlsruhe Research Institute, Karlsruhe (Germany)

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Appendices

Appendix 1: Tree Survey Schedule

Key			
Species	Common name following Johnson & More (2004)	**Age**	M – Mature; tree in 3/3 of estimated lifespan
Height	Measured to nearest 0.1m		OM – Over mature; tree that has exceeded its natural life span
CC	Height of crown clearance, to nearest 0.1m		V – Veteran tree
Stems	Number of stems bifurcating below 1.5m	**RPA**	Root protection area, in metres squared
DBH	Diameter at breast height (1.5m), in millimetres	**RPR**	Root protection radius from stem, in metres
Crown spread	Measured to nearest 0.1m	**SULE**	Safe useful life expectancy of tree, in years
Age	Y – Young sapling/newly planted tree	**Category**	See BS5837 cascade chart (Table 1)
	SM – Semi-mature; tree in 1/3 of estimated lifespan	**#**	Denotes estimated value
	EM – Early mature; tree in 2/3 of estimated lifespan		

Individual Trees

Tree No.	Species	Height	CC	Stems	DBH	Crown Spread				Age	Comments	RPA	RPR	SULE	Category
						N	E	S	W						
T1	Silver birch *Betula pendula*	10.6	0	11	200 av.	3.5	4.5	4#	2.6	EM	Shrubby form. Included primary branch unions.	109	5.9	21-40	C